

U.S. Patent Appln. No. 09/704,684  
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**Amendment to the Claims:**

The listing of claims will replace all prior version, and listings, of the claims in the application:

**Listing of Claims:****Claims 1 – 15 (Canceled)****Claim 16 (Currently Amended)**

The method of claim 4, A method for scheduling packets for transmission over a forward link in a wireless communication system, comprising:

- (i) determining, on a per-packet basis, a wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal;
- (ii) receiving a reported channel condition for a forward link from the terminal;
- (iii) determining a link mode for transmission to the terminal according to the reported channel condition; and
- (iv) scheduling each of the plurality of packets in order of its respective wireless quality of service condition, and at the determined link mode, for transmission in a physical layer frame;

wherein the determination of the wireless quality of service condition includes assigning a packet tag to each of the plurality of packets, the packet tag includes a start time and a finish time, wherein scheduling includes determining a deadline for each of the plurality of packets as a function of their respective start times and a current system time, and

wherein the packet tag is defined to be  $P_{i,k}$  where  $i$  represents the number of queues and  $k$  represents number of packets,

an arrive time is defined to be  $t_{i,k}^a$  and is the current system time when the packet enters a queue,

the finish time is defined to be  $t_{i,k}^f$  and is equal to  $t_{i,k}^a + D$  where  $D$  is the packet

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delay bound,

the start time is defined to be  $t_{i,k}^s$  and is equal to  $t_{i,k}^f - D_{i,k}^{ret} - D_{i,k}^{frag}$  where  $D_{i,k}^{ret}$  is an estimated delay budget for retransmission for packets that can be retransmitted and  $D_{i,k}^{frag}$  is the estimated delay budget for fragmentation, and

the deadline for each of the plurality of packets is defined to be  $t_{i,k}^d$  and is equal to the current system time  $t$  minus the start time  $t_{i,k}^s$ .

**Claim 17 (Currently Amended)**

~~The scheduler of claim 11;~~ A scheduler for scheduling packets for forward link transmission in a wireless communication network, comprising:

a packet tag computation unit for determining, on a per-packet basis, a wireless quality of service condition for each of a plurality of packets awaiting transmission to a terminal;

a link mode determination unit for receiving a reported channel condition for a forward link from the terminal, and for determining a link mode for transmission to the terminal according to the reported channel condition; and

a scheduling unit for scheduling each of the plurality of packets in order of its respective wireless quality of service condition, and at the determined link mode, for transmission in a physical layer frame;

wherein the packet tag computation unit determines a start time and a finish time for each of the plurality of packets, the start time and finish time being functions of the respective packet delay bound and an arrive time for each of the plurality of packets, the scheduling unit determines a deadline for each of the plurality of packets as a function of its respective start time and a current system time, and

wherein the packet tag computation unit determines a packet tag,

the packet tag is defined to be  $P_{i,k}$  where  $i$  represents the number of queues and  $k$  represents number of packets,

an arrive time is defined to be  $t_{i,k}^a$  and is the current system time when the packet enters a queue,

the finish time is defined to be  $t_{i,k}^f$  and is equal to  $t_{i,k}^a + D$  where  $D$  is the packet

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delay bound,

the start time is defined to be  $t_{i,k}^s$  and is equal to  $t_{i,k}^t - D_{i,k}^{ret} - D_{i,k}^{frag}$  where  $D_{i,k}^{ret}$  is an estimated delay budget for retransmission for packets that can be retransmitted and  $D_{i,k}^{frag}$  is the estimated delay budget for fragmentation, and

the deadline for each of the plurality of packets is defined to be  $t_{i,k}^d$  and is equal to the current system time  $t$  minus the start time  $t_{i,k}^s$ .